

**ADRYAS, A NEW GENUS OF TRICHOGRAMMATIDAE (HYMENOPTERA:
CHALCIDOIDEA) FROM THE NEW WORLD TROPICS**

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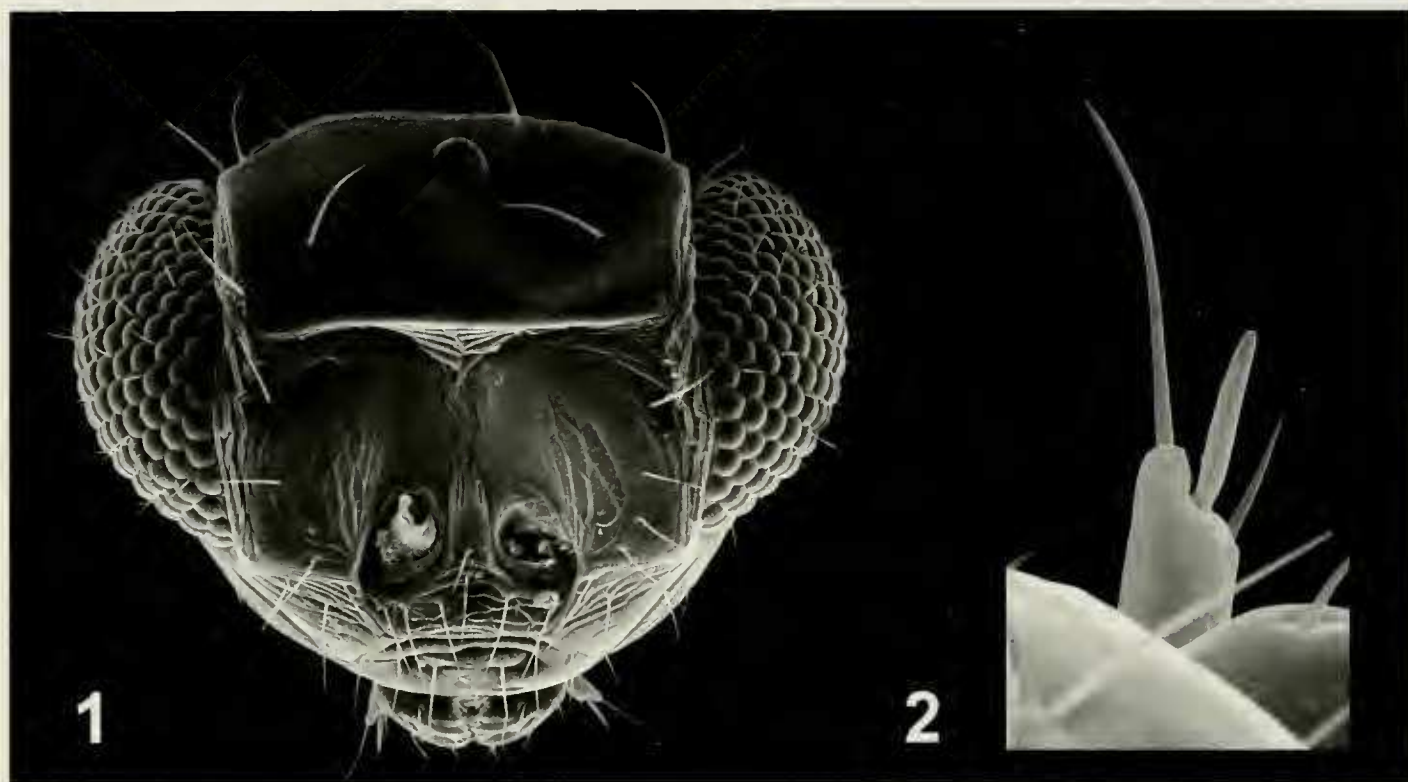
Abstract.—The new genus *Adryas*, with eight new species, is described from the Central and South American tropics. Included are *A. albicerata*, *A. bochica*, *A. erwini*, *A. incompta*, *A. iris*, *A. lioptera*, *A. magister*, and *A. plurifumosa*. The genus occurs from Costa Rica south to Bolivia and the species show a relatively high level of sympatry, at least in certain parts of the genus range. Included is a key to species and a discussion of relationships.

Key Words: Hymenoptera, Trichogrammatidae, *Adryas*, new genus, new species, New World tropics

The Trichogrammatidae remains one of the most poorly known families of Hymenoptera. One reason for this is that current concepts of generic limits and diversity are based largely on Holarctic and Australian faunas. Recent collections from tropical areas throughout the world promise to expand and modify our understanding of the family considerably. In this paper we take the opportunity to describe the new genus *Adryas*, one of the more distinctive new taxa encountered from the Central and South American tropics. Male genitalia place *Adryas* in the tribe Chaetostichini according to the classification of Viggiani (1971). Although uncommonly collected, the genus is already known to be widely distributed, occurring from Costa Rica to Bolivia, and moderately speciose, with eight new species currently assigned. Its hosts remain undiscovered, however. In addition to introducing the new genus, we include descriptions of all of its species, a key to species, and brief discussions of generic placement and species relationships.

TERMINOLOGY AND METHODS

Most descriptive anatomical terms follow Doutt and Viggiani (1968). Terms and acronyms associated with antennal sensilla and setation follow, or are modifications of, those utilized for *Trichogramma* by Vincent and Goodpasture (1986) [= V/G], Olson and Andow (1993) [= O/A], and Pinto (1999) [= P]. These are as follows: APB = aporous sensillar trichodea B (socketed) [O/A]; PLS = placoid sensilla [P]; BPS = basiconic peg sensilla [P]; FS = flagelliform setae (unsocketed) [V/G, P] (also known as multiporous pitted sensilla trichodea A [O/A]); UPP = uniporous pit pore sensilla trichodea D [O/A]; APA = aporous setae A (O/A) (also called unsocketed setae [P]). We use the term recurved sensilla (RS) as in an earlier paper (Pinto and George 2004). Similar structures in female *Trichogramma* are termed multiporous pitted sensilla trichodea C [O/A]. As in *Trichogramma*, RS occur ventroapically on the antennal club in females. They also are similar in general shape and have characteristic oblique surface grooves (Fig. 8). RS differ, however,



Figs. 1–2. *Adryas magister*, ♀. 1, Head. 2, Maxillary palp, showing terminal seta (at left) and peglike sensillum (to right of terminal seta).

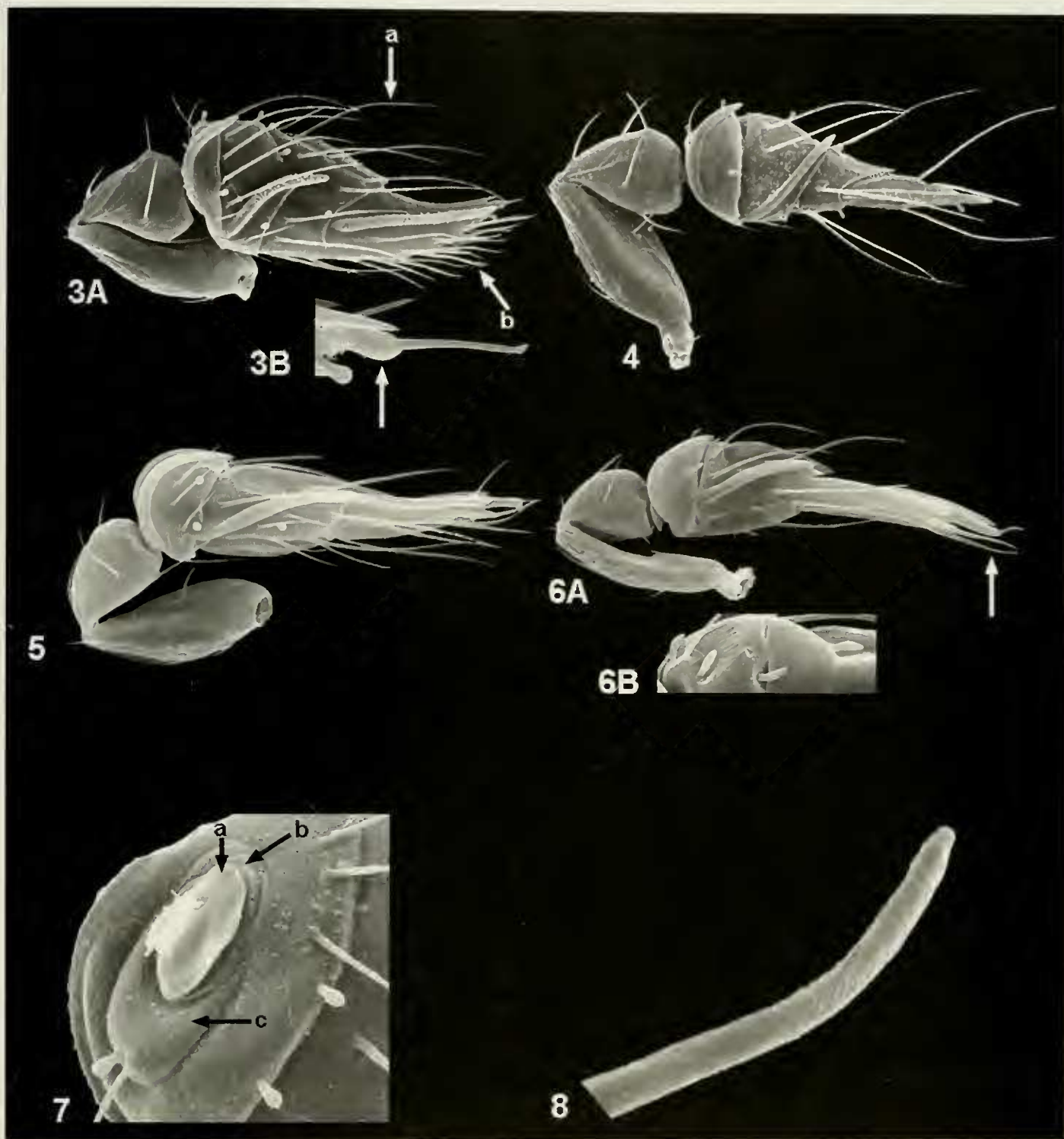
in lacking a distinct type C base (a shallow socket). As in flagelliform setae (FS), RS have a type A basal insertion (sensilla and antennal surfaces contiguous).

Sensillar terms, as applied to *Adryas*, stem from a comparison of structures with those in *Trichogramma*. Comparisons are based on examination of all species with the light microscope and three of the species (*A. magister*, *A. bochica*, and *A. incompta*) with the scanning electron microscope. It is recognized that their utilization implies ultrastructural features and function which have not been verified in *Adryas*.

The antennal club segments often are only partially separated from one another in *Adryas*. Also, the suture dividing certain segments may be obsolescent. For this reason numbering club segments is not straightforward. We have taken a five segmented club to be the ground plan state for the genus. This is based on the occurrence of five segments in males (known for two species) and five partial segments in females of all species except *A. lioptera* and *A. plurifumosa*. BPS generally occur at the apex of each club (and funicular) segment in trichogrammatids, and often are retained

even when segments are partially or completely fused. They never are associated with anelli. Placement of the BPS is helpful in identifying club segments and segment fusion. The first club segment (C1), although reduced and anelliform, occurs in all species. It is partially fused to C2 in two of the species examined with SEM (Fig. 7) but we are unsure if this is the case in all. The other club segments vary in the degree of fusion. To facilitate interspecific comparison of homologous segments, all are identified by number even if fused. Thus, C3/4 refers to the complete or partial fusion of C3 and C4. Relative club segment lengths are given only for C2–C5. The transverse, plate-like shape of C1 (Fig. 7) precludes a length measurement. The antennal club of females of several *Adryas* species has a cylindrical apical process. This process is a continuation of the last club segment and the UPP sensillum is mounted at its apex (Fig. 3B). In determining the length of the process, its base is marked at the point where the extension of the apical-most PLS leaves the surface of the club.

Acronyms for fore wing venation in the descriptions are as follows: PM = premar-



Figs. 3–8. Antennae of *Adryas*. 3A, *A. magister*, ♀, lateral [arrows to FS (a) and RS (b)]; 3B, as 3A, enlargement of club apex showing apical process (arrow) and UPP inserted at its apex. 4, *A. magister*, ♂, lateral. 5, *A. incompta*, ♀, lateral. 6A, *A. bochica*, ♀, lateral (arrow at one of two RS at apex of club); 6B, as 6A, except dorsomedial, enlargement of base of club showing narrow, subfusiform BCP sensilla. 7, *A. magister*, ♀, basal view of club with arrows at A1 (a), A2 (b) and C1 (c), also showing clavate BCP sensilla on C1 and C2. 8, *A. bochica*, ♀, detail of RS (see arrow in Fig. 6A), showing oblique ridges characterizing these structures.

ginal vein; MV = marginal vein; SV = stigmal vein. The division between PM and MV is not as obvious in *Adryas* as in many other trichogrammatids because the two veins are broadly confluent. We use the position of the two PM campaniform sensilla (or apical-most sensillum if they are dis-

joined) as the boundary between these two veins (Figs. 18, 20). Setation on the fore wing veins varies interspecifically. Most of this variation is on the dorsal surface. On the MV a distinction is made between anterior and posterior setae. The anterior setae are at the margin of the wing and are slight-

ly longer than the row of posterior setae situated only slightly behind (Fig. 18). The PM has two dorsal setae, and their position relative to one another varies. A field of foliate and apically attenuate structures (= foliate sensilla) occur in *Adryas* on the ventral surface of the fore wing anterior to the retinaculum (Fig. 10). They appear to be modified setae and also may replace setae along certain posterior setal tracks. An additional field of structures, minute cuticular nub-like projections, also on the wing's ventral surface, occurs in most species near the base of the PM. We refer to these as alar acanthae.

All measurements for length and width represent maximum dimensions. Unless indicated, body length measurements are taken from card-mounted, hexamethyldisilazane-dried specimens (Heraty and Hawks 1998). Measurement is taken from the front of the head (in a hypognathous position) to the apex of the metasoma. Fore wing length is taken from the apex of the tegula to the apex of the wing. Quantitative data are means derived from specimens representing the sampled geographic range; the range also is given when variation is possibly significant. Unless indicated, these data are based on three specimens.

Material studied of all species included slide- and card-mounted specimens. The number of specimens mounted on slides is given in the material examined section of each species. To better assure conspecificity, types are restricted to slide-mounted individuals. Acronyms used for collections are as follows: BMNH, The Natural History Museum, London; CNC, Canadian National Collection of Insects, Ottawa; IAVH, The Humboldt Institute, Villa de Leyva, Colombia; NMNH, National Museum of Natural History, Smithsonian Institution, Washington, DC; UCRC, University of California, Riverside (Department of Entomology). The acronym PN and PNN associated with several of the collecting localities indicate Parque Nacional and Parque Nacional Natural, respectively.

TAXONOMY

Adryas Pinto and Owen, new genus

Type species.—*Adryas magister* Pinto and Owen, n. sp.

Diagnosis.—The structure of the antenna and fore wing distinguishes *Adryas*. Antenna without a funicle, C1 anelliform, asymmetrical and closely appressed to base of C2 (Fig. 7). Females with number of club segments varying from 3–5 but never with 5 complete segments, instead segments variously fused, completely or in part; club with at least a few RS ventrally on apical segment. Fore wing fumate behind venation, MV and PM confluent, PM distinctly wider than MV with a distinct gap between submarginal vein and PM; gap also reflected in fumation. PM shape characteristic (Fig. 20): subtriangular, with anterior margin deviating minimally, if at all, from wing margin but posterior margin diverging from posterior border of marginal vein resulting in a gradual widening to its base; the basal margin of the PM is its widest aspect and is perpendicular to the wing's longitudinal axis. Male genitalia (Fig. 28) as in the Chaetostrichini (see Description).

Description.—Body robust, compact, convex dorsally; surface smooth (Fig. 9), dorsum of mesosoma weakly reticulate. Body length 0.4–0.6 mm. Eyes red. Head (Fig. 1) wider than mesosoma, with a distinct, smooth plate on vertex; vertex flat, on same plane as mesoscutum, perpendicular to face; lateral ocelli placed adjacent to compound eyes. Malar sulcus present. Antenna (Figs. 3–8, 11–16) laterally compressed with 1 distinct anellus, and a 3–5 incompletely segmented club in females (club completely 5 segmented in male); second anellus incomplete, almost completely fused to club; C1 transverse, anelliform, strongly asymmetrical, produced medially; club always with at least two RS ventrally on apical segment; FS relatively few on C2–C5; at least 1APB on C1, C2 and at apex of C5; PLS absent on C1, a single curved PLS on C2, variable in num-

ber on other segments. Mandible with 5 teeth, 3 posterior most teeth well sclerotized and distinct, 2 anterior-most teeth smaller, less obvious. Maxillary palp 1-segmented (Fig. 2) with a well developed elongate peglike sensillum usually slightly below apex. Pronotum narrowly divided medially. Midlobe of mesoscutum with 1 or 2 pair of setae; scutellum with 2 pair. Mesopleural suture present. Fore wing venation (Figs. 17–27) elongate, extending 0.6–0.8 wing length; MV elongate, confluent with the considerably shorter PM; SV distinct; PM subtriangular, distinctly wider than MV, widening toward base due to marked divergence of posterior margin, basal margin of PM subperpendicular to longitudinal axis of wing; with a distinct gap between PM and submarginal vein, gap coinciding with a narrow but distinct clear (non-fumate) zone extending at least partially across base of wing; costal cell narrow, with 0–2 setae in narrow apical extension of cell; disk distinctly fumate beneath venation, with several setal tracks apical to fumate area; an RS1 present or absent; basal vein track of two setae present; a field of foliate sensilla on ventral surface near base of wing anterior to retinaculum (Fig. 10). Hind wing with 3 setal tracks. Male genitalia of the chaetostrichine type (Viggiani 1971): elements fused into a single structure with a large anterodorsal aperture but without parameres, volsellae or a distinct aedeagus (Fig. 28). Ovipositor not extending appreciably beyond apex of metasoma. Hypopygium present, variable in length, extending from 0.2–0.8 length of ovipositor.

Etymology.—This genus was known in our laboratory as “A” previous to this description. We couple this with *Dryas* (gender feminine), Latin for a wood nymph or dryad, in reference to the forested sites from which collections of the genus originated.

Geographic distribution.—*Adryas* is known to occur from Costa Rica south to Bolivia. Most collections are from Costa Rica, Colombia, Venezuela and Ecuador. The level of sympatry within the genus is

relatively high. For example, four of the species have been collected at La Selva Biological Station in Costa Rica; four also have been taken in fogging samples from the Reserva Etnica Waorani in Ecuador, with a fifth collected at the Tiputini Biological Station nearby; and three species are known from Amacayacu National Park in Colombia (see Material Examined in the species treatments). All collections appear to be at low elevations and from mesic forested habitats.

Discussion.—*Adryas* is tentatively placed in the Chaetostrichini as defined by Viggiani (1971, 1984) and based primarily on male genitalia. Few genera of chaetostrichines that lack a funicle have a very short anelliform first club segment. Those that do may be confused with *Adryas* and include *Uscanoidea*, *Lathrogramma* and one or two other undescribed New World genera. All are separated by wing venation. In these genera the premarginal is narrower than the marginal vein or subequal in width, not wider, and a gap between the submarginal and premarginal veins does not exist. The extensive fumation of the fore wing and the presence of recurved setae ventroapically on the female club further distinguishes *Adryas* from these genera. The presence of foliate sensilla (Fig. 10) on the underside of the fore wing, although apparently not common in Trichogrammatidae, does occur in *Trichogramma* (Schmidt and Smith 1988, as flattened hairs) and in certain other genera as well (unpubl.).

The monotypic *Uscanopsis* Girault, known only from its poorly preserved types of *U. carlylei* Girault (examined), may also be close to *Adryas*. Unlike the other chaetostrichines mentioned, the premarginal vein is wider than the marginal vein in this genus. However, its shape is not comparable. In *Uscanopsis* the premarginal vein is more elongate, not subtriangular and it is widest at the middle not at its basal margin. The greatly enlarged apical spur of the hind tibia, absence of a submarginal/premarginal vein gap, and densely setose fore wing that lacks distinct setal tracks and fumation pro-

vide additional separation from *Adryas*. Also, it appears that the female antenna in *Uscanopsis* lacks the short anelliform first club segment that characterizes *Adryas*. Illustrations of these features in *Uscanopsis* are provided by Doult and Viggiani (1968, fig. 46).

Interspecific variation in *Adryas* is considerable for a genus of Trichogrammatidae. Features commonly used to diagnose genera such as number of club segments, club shape, presence or absence of the RS1 setal track, and number of setae on the mesoscutum all vary. Because all species share distinct features and because intermediate states bridge the extremes of some of the features that do vary, subdividing the genus is not a practical option.

The presence of recurved setae (RS) on the club, characteristic of many Trichogrammatini genera, is not reported for many Chaetostichini. In addition to *Adryas* these sensilla are known also in the recently described *Kyuwia* from Africa (Pinto and George 2004), and in *Brachista* (Pinto 1994).

KEY TO THE SPECIES OF *ADRYAS* (females)

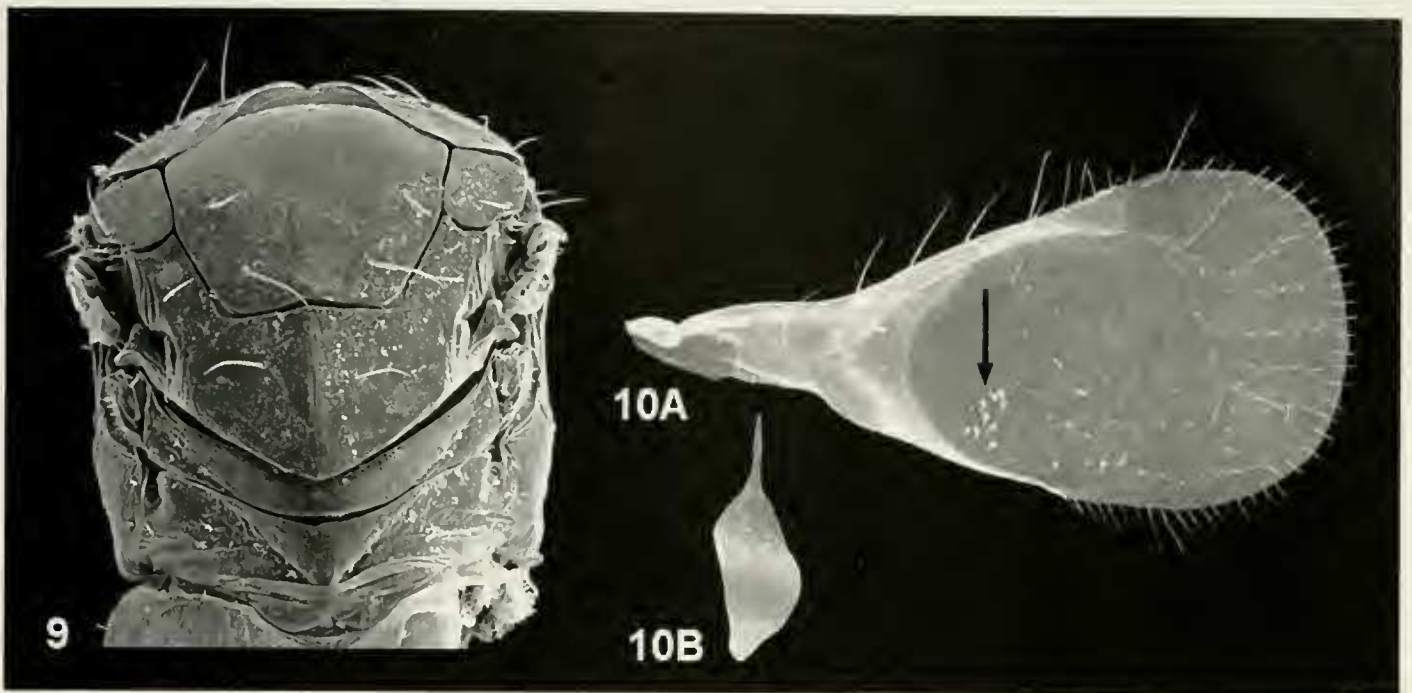
1. Club with last segment symmetrical, cylindrical, with no more than 2–3 recurved setae (RS) on ventroapical surface (Figs. 5, 6, 15, 16) 2
 - Club with last segment asymmetrical, ventral surface convex and dorsal surface straight or concave, with a distinct patch of 10 or more RS on ventroapical surface (Figs. 3, 11, 13, 14) 5
2. Midlobe of mesoscutum with one pair of setae. Club with basiconic peg sensilla (BPS) relatively narrow for entire length, subfusiform (Fig. 6B) 3
 - Midlobe of mesoscutum with two pair of setae (Fig. 9). Club with BPS expanded apically, clavate or subglobose (Fig. 7) 4
3. Fore wing without a distinct RS1 setal track (Fig. 25). Club with last segment elongate, longer than remaining segments combined (Fig. 6A) *bochica*, n. sp.
 - Fore wing with an RS1 setal track (Fig. 27). Club with last segment shorter, not longer than remaining segments combined (Fig. 16) *iris*, n. sp.

4. Club with last segment bearing an apical process (Fig. 5). Antenna brown in color. Ovipositor distinctly longer than hind tibia *incompta*, n. sp.
 - Club with last segment lacking an apical process (Fig. 15). Antenna white, suffused with brown. Ovipositor shorter than hind tibia *albicerata*, n. sp.
5. Fore wing with a distinct RS1 setal track (Fig. 17). Marginal vein (MV) with 6 setae on dorsal surface (3 anterior and 3 posterior), the two basal-most posterior setae distinctly thicker than others (Fig. 18). Maxillary palp with peg-like sensillum arising distinctly below apex *erwini*, n. sp.
 - Fore wing without an RS1 setal track (Figs. 19, 22, 23). MV with 4 setae on dorsal surface (3 anterior and 1 posterior), posterior seta not thicker than others. Maxillary palp with peg-like sensillum arising near apex (as in Fig. 2) 6
6. Fore wing with a large circular clear area in basal 2/5 of wing behind venation (Fig. 19). Club with last segment bearing an apical process (Fig. 3B) *magister*, n. sp.
 - Fore wing uniformly fumate behind venation (Figs. 22, 23). Club with last segment lacking an apical process (Figs. 13, 14) 7
7. Fore wing venation elongate, with stigmal vein (SV) extending 0.8 distance from base to apex of wing. Fore wing fumation extensive but not reaching beyond the stigma in anterior portion of disk (Fig. 22). Propodeal disk rounded apically with a mediolongitudinal ridge on its surface *lioptera*, n. sp.
 - Fore wing venation not as elongate, with SV only extending 0.6 distance from base to apex of wing. Fore wing fumation extending beyond level of the stigma over entire width of disk (Fig. 23). Propodeal disk attenuate apically, without a mediolongitudinal ridge on its surface *plurifumosa*, n. sp.

Adryas albicerata Pinto and Owen, new species (Figs. 15, 24)

Diagnosis.—This species can be distinguished by the pale antennae, the anterior pair of scutellar setae which are distinctly shorter than the posterior pair, and the subconical club lacking an apical process.

Description.—Female. Body length ca. 0.5 mm (slide-mounted specimens). Color brown with antennae, apex of tibiae and tarsomeres I and II distinctly lighter; antenna white, suffused with brown. Fore wing fu-



Figs. 9–10. *Adryas magister*, ♀, 9, Mesosoma. 10A, Fore wing, venter (arrow to field of foliate sensilla). 10B, Enlargement of a foliate sensillum in field indicated by arrow in 10A.

mation extending to apical $\frac{1}{4}$ of wing, fumation lighter immediately behind venation.

Maxillary palp ca. $2\times$ as long as wide with peglike sensillum as long as palp and more than half length of apical seta. Measurements of antennal scape, pedicle and club: length/width ratio—2.9 (2.8–3.0), 1.2 (1.1–1.3), 3.0, resp.; relative length—8: 5: 13, resp.; relative width—7: 9: 11, resp. Club almost symmetrical in outline, subconical, incompletely 5-segmented as in *bochica* (C3 + C4 partially fused) but C2 and C3/4 distinctly more asymmetrical, their length varying with surface; relative maximum length of C2–C5 = 2: 5 (C3/4): 6; C5 narrow, elongate, ca. 0.8 the length of remainder of club, gradually narrowing to apex, without an apical process. Club sensilla: with only 2 RS ventroapically on C5; BPS subglobose; PLS on C2 (1), C3/4 (3) and C5 (4), those at apex of C5 extending slightly beyond segment apex; UPP sensilla at apex of C5 setiform; 2–3 APA on C2 and at base of C3/4.

Midlobe of mesoscutum with 2 pair of setae; scutellum with anterior pair considerably shorter, only ca. $\frac{2}{5}$ length of posterior pair. Propodeal disk subtriangular,

with apex narrowly to moderately broadly rounded. Fore wing ca. 1.8 (1.7–1.9) as long as wide, fringe setae 0.14–0.17 wing width; venation extending 0.6 wing length; MV ending abruptly at apex, SV arising from its posteroapical corner and directed slightly toward apex of wing; relative length of PM, MV, SV = 12: 27: 11; PM $2.0\text{--}3.0\times$ as wide as MV, diverging slightly from wing margin and with a single seta in membrane anterior to vein, PM with posterior seta at basal margin of vein, distinctly more basal than anterior seta, campaniform sensilla in contact; MV with 4 dorsal setae (3 anterior, 1 posterior) and 6–7 shorter ventral setae, basal-most anterodorsal seta not adjacent to PM; SV with a short seta slightly posterior to uncus. Fore wing disk moderately densely setose with ca. 16 setal tracks, tracks distinct in non-fumate section of wing, posterior tracks continuing basally into fumate area; RS1 present; membrane behind venation with scattered setae except anteriorly; distal seta in basal track anteroapical to basal seta; alar acanthae ca. 10 in number. Hind wing with anterior and middle setal tracks complete, posterior track not extending beyond half distance from level of hamuli to wing apex.

Ovipositor slightly shorter than hind tibia (OL/HTL = 0.90, $n = 2$); outer plate widening considerably posteriorly, maximum ovipositor width to length = 0.70. Hypopygium extending 0.5–0.6 ($n = 2$) length of ovipositor.

Male. Unknown.

Type.—Holotype ♀: PERU. *Loreto*: Teniente Lopez (220 m); vii-22-1993; R. Leschen, collr.; deposited in CNC.

Etymology.—In reference to the pale antenna of this species.

Material examined.—3 ♀ (all on slides). COLOMBIA. *Magdalena*: Zaino (PNN Tayrona, 50 m); 11°20'N, 74°02'W; v-13/30-2000; 'M136'; 1 ♀; R. Henriquez. COSTA RICA. *Heredia*: 'Est. Biol. La Selva' (75 m); 10°26'N, 84°01'W; ii-27/28-2003; 1 ♀; J. S. Noyes; 1 ♀. PERU. *Loreto*: 1 ♀ (see Type).

***Adryas bochica* Pinto and Owen,
new species
(Figs. 6, 25)**

Diagnosis.—The symmetrical, subconical club, the elongate last club segment (longer than the remainder of club), and the absence of an RS1 setal track on the fore wing separate this species from congeners.

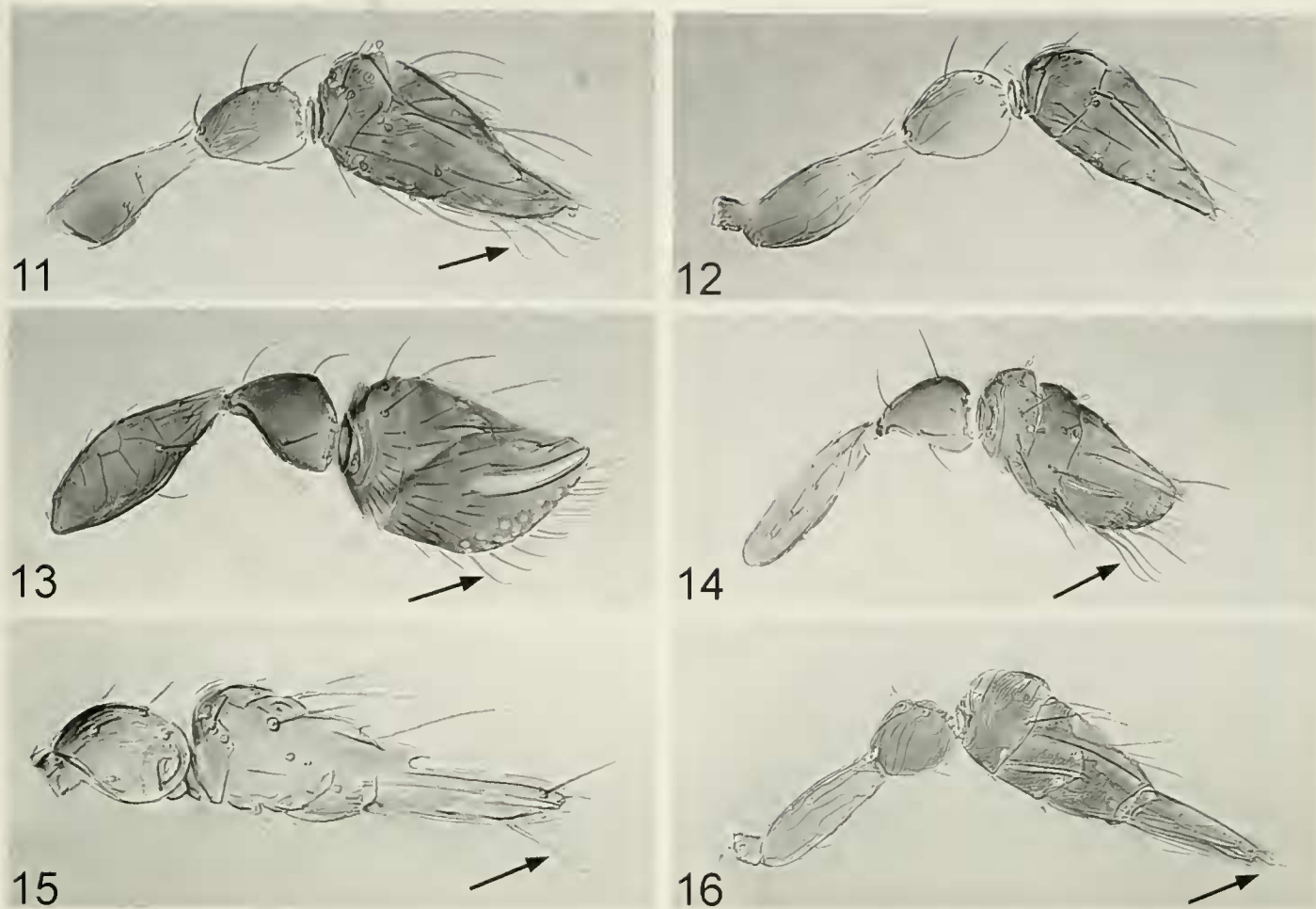
Description.—Female. Body length 0.4 mm ($n = 5$). Color light brown with mesosoma and apex of metasoma slightly darker, and tarsi and apex of tibiae lighter; antennal pedicel bicolored, dark brown dorsally, considerably lighter ventrally. Fore wing uniformly fumate beneath venation, fumation extending somewhat beyond level of venation in posterior half of disk.

Maxillary palp ca. 3× as long as wide with peglike sensillum ca. one third palp length and a fourth apical seta length. Measurements of antennal scape, pedicle and club: length/width ratio—3.5 (3.0–4.0) 1.3, 3.6 (3.5–3.8), resp; relative length—7: 5: 22, resp.; relative width—7: 10: 15, resp. Scape elongate, linear, narrowing slightly to apex. Club almost symmetrical in outline, subconical, with C3 and C4 incompletely separated; segments only slightly asymmet-

rical; relative maximum length of C2–C5 = 16: 32 (C3/4): 57; C5 abruptly narrower than other segments, elongate, longer than C1–C4 combined, abruptly narrowing further at apical third, with a relatively short apical process. Club sensilla: C5 with only 2 RS on ventral surface at apical third; PLS on C2 (1), C3/4 (3) and C5 (4), one PLS on C3/4 extending entire length of combined segment; BPS narrow and fusiform; UPP on apical process short, only slightly longer than process itself, apparently truncate at apex; 2 APA at base of C3/4.

Midlobe of mesoscutum with only posterior pair of elongate setae present; scutellum with 2 pair of elongate subequal setae. Propodeal disk not appreciably produced, its posterior border arcuate. Fore wing 1.8× as long as wide; fringe setae relatively short, ca. 0.15 wing width. Fore wing venation attaining apical 0.6 of wing; MV abruptly curved at apex to form SV, which is distinctly constricted at base and almost perpendicular to MV; relative length of PM, MV, SV = 5: 13: 7; PM ca. 2.5× as wide as MV, diverging slightly from wing margin but without setae in membrane anterior to vein; PM with posterior seta at basal margin of vein, more basal than anterior seta, campaniform sensilla not separated; MV with 5 dorsal setae (3 elongate anterior; 2 shorter posterior) and 5–6 shorter ventral setae; basal-most anterodorsal seta adjacent to PM; SV with a short seta medial to uncus. Fore wing disk moderately densely setose, with ca. 16 setal tracks obvious in clear apical area of wing, scattered setae in apical section of fumate area; a distinct RS1 not present (setae present in area of RS1 but not differentiated from neighbors); two basal track setae subparallel to longitudinal axis of wing; alar acanthae few in number (<10). Hind wing with anterior and middle setal tracks complete, posterior track not extending beyond half distance from level of hamuli to wing apex.

Ovipositor subequal in length to hind tibia (OL/HTL = 1.02); outer plate widening posteriorly, maximum ovipositor width to



Figs. 11–16. Antennae of *Adryas* (medial surface in primary focus, arrows indicating RS). 11, *A. erwini*, ♀. 12, *A. erwini*, ♂. 13, *A. lioptera*, ♀. 14, *A. plurifumosa*, ♀. 15, *A. albicerata*, ♀. 16, *A. iris*, ♀. RS accentuated by darkening in Photoshop®.

length = 0.50. Hypopygium extending 0.6 length of ovipositor.

Male. Unknown.

Types.—Holotype ♀: COSTA RICA. *Heredia*: La Selva Biol. Station; 50 m; ii-1991; Malaise trap; J. S. Noyes, collr; deposited in BMNH. Two female paratypes, same data as holotype; UCRC.

Etymology.—Bochica, the solar god of the Chibcha people of ancient central Colombia, an area included in the range of this species.

Material examined.—18♀ (10 on slides). BELIZE. Las Cuevas (550 m); 16°44'N, 88°59'W; v-1999; Malaise trap; 1♀; C. Minty. COLOMBIA. *Magdalena*: Zaino (PNN Tayrona, 50 m); 11°20'N, 74°02'W; v-29/vi-14-2000; "M241"; 1♀; R. Henriquez. COSTA RICA. *Alajuela*: Reserva Rincón Forestal (Est. Caribe, 400 m); 10°53'N, 83°18'W; ii-19/20-2003; sweep; 1♀; J. Noyes. San Ramon (Estac. Biol., 800

m); vii/viii-1995; 1♀; P. Hanson. *Heredia*: Chilamate (75 m); vii/x-1990; 1♀; P. Hanson. La Selva Biological Station (50 m); ii-1991; Malaise trap; 6♀; J. Noyes (includes Types). Same except: 75 m; 10°26'N, 84°01'W; ii-27/28-2003; 1♀. OTS-La Selva (100 m); ix-14-1995; Malaise trap (M11.456); 1♀; ALAS Project. Same except: x-16-1995; Malaise trap (M01-471); 1♀. *Puntarenas*: R. F. Golfo Dulce; 24 km W. Piedras Blancas (200 m); xii-1992; 1♀; P. Hanson. ECUADOR. *Napo*: Onkone Gare Camp, 1 km S. (Reserva Etnica Waorani, 216.3 m); 00°39'25.7"S, 76°27'10.8"W; x-4-1996; "fogging in terre firme forest"; 1♀; Lot 1755; T. Erwin, et al. Tiputini Biodiversity Sta. (nr. Yasuni Nat'l Park, 220–250 m); 00°37'55"S, 76°08'39"W; vii-4-1998; "fogging terre firme forest"; 1♀; Lot 1875; T. Erwin, et al. Napo River (Sacha Lodge); 0°30'S, 76°30'W, vi-18/23-1994; Malaise trap; 1♀; P. Hibbs.

Remarks.—The specimen from Reserva Rincón Forestal, Costa Rica, is a molecular voucher (D#1227; Owen, et al., in prep.). Only a fore wing and one antenna are preserved, mounted on a slide.

Adryas erwini Pinto and Owen,
new species

(Figs. 11, 12, 17, 18)

Diagnosis.—The insertion of the peglike maxillary sensillum at the middle of the palpal segment rather than just below its apex is unique. Also, unlike congeners, the dorsum of the marginal vein bears six setae rather than five or fewer, and the two posterior and basal-most of these setae are considerably thicker than the others. The fore wing venation of the male is not inflated in this species.

Description.—Female. Body length 0.4–0.5 mm (slide mounted specimens). Color apparently uniformly brown except apex of scape and venter of pedicel obviously lighter; fore wing uniformly fumate behind venation.

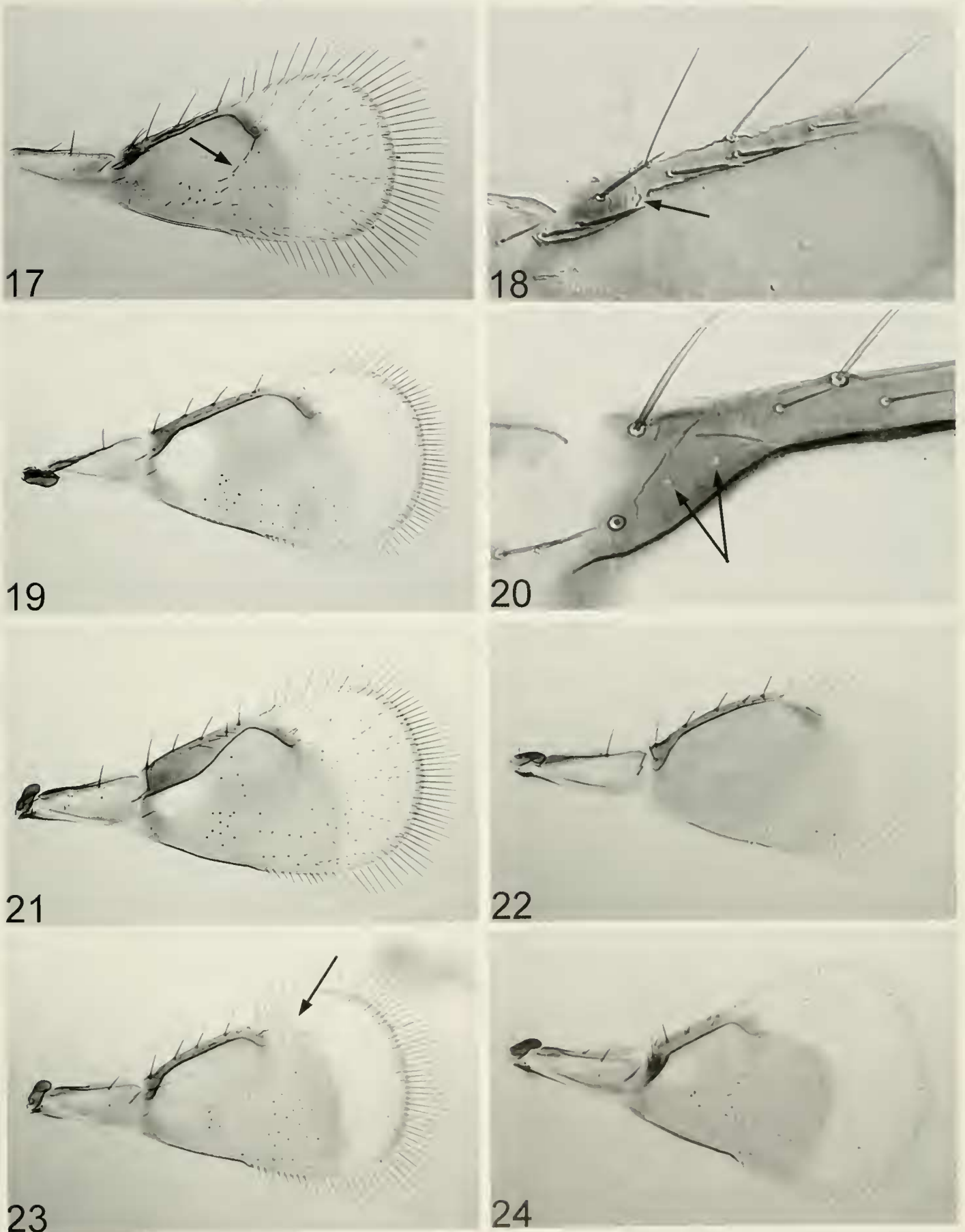
Maxillary palp unique for genus, ca. $3\times$ as long as wide, abruptly and asymmetrically narrowed at middle with peg-like sensillum arising at middle, at point of abrupt palpal narrowing, its apex only slightly surpassing apex of palp; sensillum elongate, ca. half length of palp and $0.4\times$ length of apical seta. Measurements of antennal scape, pedicle and club: length/width ratio—2.8: 1.3: 2.6 (2.3–2.8), resp.; relative length—7: 4: 11, resp.; relative width—3: 4: 5, resp. Scape not inflated but distinctly wider in basal half. Club asymmetrically tapering from base to apex; 5-segmented but with C3 and C4 incompletely separated over most of circumference; segments asymmetrical, C3/4 longest dorsally, C5 longest ventrally, C5 with ventral surface convex, dorsal surface relatively straight; relative maximum length of C2–C5 = 15: 35 (C3/4): 33; C5 slightly less than $0.5\times$ length of entire club, with a short apical process. Club sensilla: C5 with fewer RS than in *magister* (ca. 10) and confined to apical half of segment; PLS on C2 (1), C3/

4 (2), C5 (5), apical PLS on C5 extending slightly beyond apical process; BCP subglobose; UPP on apical process setiform, ca. $3\times$ length of process itself; several APA on C2 and base of C3/4.

Midlobe of mesoscutum and scutellum each with 2 pair of elongate setae, anterior pair of scutellar setae ca. $0.7\times$ length of posterior pair. Propodeal disk subtriangular, with a fine mediolongitudinal ridge at center, rounded at apex. Fore wing 2.2 (2.1–2.3) as long as wide, fringe setae ca. $0.4\times$ wing width. Fore wing venation attaining apical 0.6–0.7 of wing; MV abruptly curving at apex to form SV, the latter almost perpendicular to MV, with only a slight constriction between MV and stigma; relative length of PM, MV, SV = 6: 14: 7; PM ca. twice as wide as MV, diverging slightly from wing margin with two setae in membrane anterior to vein; PM with posterior seta slightly more basal than anterior seta, both apical to basal margin of vein and both thicker than in other species, campaniform sensilla adjacent; MV with 6 dorsal setae (3 anterior, 3 posterior) and 4 slightly shorter ventral setae, all anterodorsal setae on MV elongate, the two basal-most posterior setae slightly shorter than anterior setae but considerably thicker than all other MV setae, the apical-most posterior seta short and thin; SV with a short seta medial to uncus. Fore wing disk moderately densely setose with 12–13 longitudinal setal tracks in non-fumate area of wing, only posterior tracks extending basally into fumate area; RS1 present, its setae stouter than others in membrane; two basal track setae subparallel to longitudinal axis of wing; alar acanthae 10–15 in number. Hindwing with 3 complete setal tracks.

Ovipositor 1.47 ($n = 1$) as long as hind tibia; outer plate narrow not appreciably widening posteriorly, maximum width to length = 0.20. Hypopygium extending 0.7 ($n = 1$) length of ovipositor.

Male. Single male as in female except antennal club subconical and almost symmetrical in outline (cf. Figs. 11, 12); C5



Figs. 17-24. Fore wings of *Adryas* (dorsal surface in primary focus). 17. *A. erwini*, ♀ (arrow to RS1 setal track). 18. *A. erwini*, ♀, enlargement of venation (arrow to campaniform sensilla marking apex of PM). 19. *A. magister*, ♀. 20. *A. magister*, ♀, enlargement of venation (arrows to disjunct campaniform sensilla). 21. *A. magister*, ♂. 22. *A. lioptera* ♀. 23. *A. plurifumosa*, ♀ (arrow to limit of wing fumation in anterior section of wing). 24. *A. albicerata*, ♀.

lacking RS, without an apical process; C3 and C4 incompletely separated, as in female. Fore wing venation as in female, not modified but with the two campaniform sensilla at apex of PM separated from one another by a distance of ca. twice sensillar diameter. Genitalia short, 0.30 length of hind tibia.

Types.—Holotype ♀: ECUADOR. *Napo*: Tiputini Biodiversity Sta. (nr. Yasuni Nat'l Park); 220–250 m; 00°37'55"S, 76°08'39"W; x-22-1998; "fogging terre firme forest"; Lot #1971; T. Erwin, et al. collrs. Allotype ♂: ECUADOR. *Napo*: Onkone Gare Camp, 1 km S. (Reserva Etnica Waorani); 216.3 m; 00°39'25.7"S, 76°27'10.8"W; x-5-1995; Lot 1194; T. Erwin, et al. Paratype ♀: Same data as holotype except collected ii-8-1999; Lot #2024. All types deposited in the NMNH.

Etymology.—After Dr. Terry Erwin of the Smithsonian Institution (Washington, DC), thus far the sole collector of this species.

Material examined.—2♀, 1♂ (all on slides). ECUADOR. *Napo*: (see Types).

***Adryas incompta* Pinto and Owen,
new species
(Figs. 5, 26)**

Diagnosis.—This species can be distinguished by the following combination of features: relatively dark colored antennae, subconical club with a terminal projection, two pair of setae on the mesoscutal midlobe, anterior pair of scutellar setae subequal to posterior pair, and subglobose BPS sensilla.

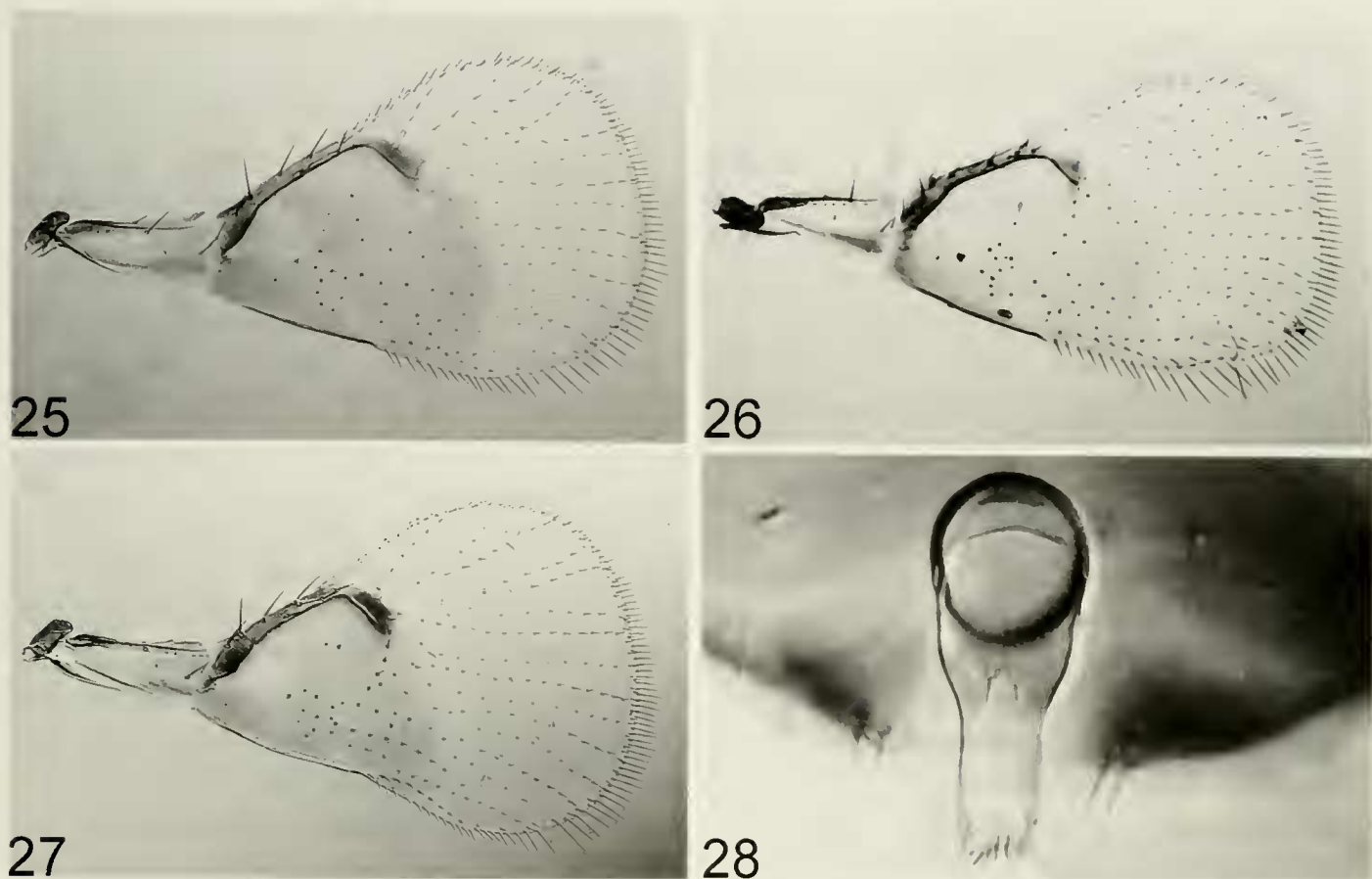
Description.—Female. Body length ca. 0.5 mm (slide mounted specimens). Color brown except tarsi and apex of tibiae lighter; also base and apex of scape, and ventral surface of pedicel distinctly lighter. Fore wing fumation relatively light, extending to apical $\frac{1}{3}$ of wing.

Maxillary palp ca. twice as long as wide, with peglike sensillum elongate, almost as long as palp itself and slightly more than half length of apical seta. Measurements of antennal scape, pedicel and club: length/width ratio—2.5 (2.4–2.9), 1.4 (1.3–1.5),

3.1, resp.; relative length—5: 3: 11, resp.; relative width—16: 17: 28, resp. Club almost symmetrical in outline, subconical, incompletely 5-segmented, C3 and C4 almost completely fused with only an obsolescent suture obvious dorsomedially, segments asymmetrical in lateral view (as in *albicerata*); relative maximum length of C2–C5 = 4: 7 (C3/4): 7; C5 narrow, elongate, with a moderately long apical process comprising ca. $\frac{1}{5}$ total segment length, C5 0.7 length of remainder of club. Club sensilla: 2 gradually curved RS ventroapically on C5; PLS on C2 (1), C3/4 (4) and C5 (3); BPS subglobose; UPP on apical process very short, setiform, less than half length of process; several APA on C2 and C3/4.

Midlobe of mesoscutum with two pair of setae; scutellum with 2 pair of setae, anterior pair only slightly shorter than posterior pair. Propodeal disk subtriangular, with a very faint mediolongitudinal ridge, rounded at apex. Fore wing 2.0× as long as wide; fringe setae ca. 0.2 maximum width of wing; venation attaining ca. 0.6 length of wing; MV abruptly ending apically, SV arising from its apicoposterior corner and directed slightly toward wing apex; relative length of PM, MV, SV = 14: 26: 13; PM ca. 2.5× as wide as MV, diverging slightly from wing margin and with a single seta in membrane anterior to vein; PM with posterior seta distinctly basal to anterior seta; MV with 3 elongate dorsal setae on anterior margin (no posterior setae) and 6 shorter ventral setae, basal-most dorsal seta not adjacent to PM; SV with stigmal seta slightly posterior to uncus. Fore wing disk moderately densely setose, with ca. 16 setal tracks in non-fumate region of wing, posterior tracks continuing basally into fumate area; RS1 present; basal track setae subparallel to longitudinal axis of wing; with 10 or fewer alar acanthae. Hind wing with posterior track incomplete, extending only ca. half the distance from level of hamuli to wing apex.

Ovipositor 1.3–1.5× length of hind tibia; outer plate widening posteriorly, maximum



Figs. 25–27. Fore wings of *Adryas*. 25, *A. bochica*, ♀. 26, *A. incompta*. 27, *A. iris*. 28, Male genitalia, *A. magister* (circular anterodorsal aperture at base).

width to length of ovipositor = 0.53 ($n = 2$). Hypopygium apparently short, extending 0.25 ($n = 1$) length of ovipositor.

Male. Unknown.

Type.—Holotype ♀: COSTA RICA. *Limón*: PN Tortugero (0 m); iv/v-1989; J. Solano, collr.; deposited in BMNH.

Etymology.—*Incompta*, Latin for unadorned or simple; in reference to the absence of highly distinguishing features in this species.

Material examined.—3 ♀ (all on slides). COSTA RICA. *Heredia*: La Selva Biological Station (75 m); 10°26'N, 84°01'W; ii-27/28-2003; 1 ♀; J. Noyes. *Limón*: (See Type); 1 ♀. ECUADOR. *Napo*: Onkone Gare Camp, 1 km S. (Reserva Etnica Waorani, 216.3 m); 00°39'26"S, 76°27'11"W; x-5-1995; "fogging in terre firme forest"; 1 ♀; Lot 1192; T. Erwin, et al.

***Adryas iris* Pinto and Owen, new species**
(Figs. 16, 27)

Diagnosis.—The following combination of traits separates this species: Club sub-

conical, symmetrical, with its last segment shorter than the remainder of club; RS1 setal track present; midlobe of mesoscutum with only a single pair of setae.

Similar to *A. bochica*; differing as follows:

Description.—Female. Color similar but pedicel not as distinctly bicolored; surface of antenna somewhat more wrinkled. Antennal club with C5 shorter, only ca. 0.4 length of entire club and 0.8–0.9 length of segments C1–C4 combined; C5 evenly narrowed from base to apical process, not abruptly so at apical third. Measurements of antennal scape, pedicel and club: length/width ratio—3.2 (3.1–3.6), 1.3, 3.3 (3.1–3.5), resp.; relative length—41, 25, 87, resp.; relative width—13, 20, 28, resp.; relative length of C2–C5 = 9: 17 (C3/4): 20. Fore wing with MV somewhat shorter, no more than twice the length of PM; MV not evenly curving at apex, ending abruptly and SV arising from its posteroapical corner; MV with only 4 ventral setae; SV with a

short seta posterior or lateral to uncus. RS1 present, distinct. Ovipositor longer, $1.25 \times$ ($1.2-1.3$, $n = 2$) length of hind tibia. Hypopygium somewhat shorter, extending 0.5 ($n = 2$) length of ovipositor.

Male. Unknown.

Type.—Holotype ♀: BOLIVIA. *Santa Cruz*: Gral. [= General] Saavedra; i-1/30-1994; 'yellow pan trap under natural vegetation'; J. C. Monje, collr; deposited in NMNH.

Etymology.—Iris, ancient Greek goddess of the rainbow.

Material examined.—5 ♀ (4 on slides). BOLIVIA. *Santa Cruz*: See Type; 1 ♀. COLOMBIA. *Amazonas*: PNN Amacayacu, Matamata (150 m); $03^{\circ}23'S$, $70^{\circ}06'W$; vii-12/19-2000; 1 ♀; A. Parente. COSTA RICA. *Guanacaste*: Santa Rosa National Park (Hacienda 2-c); i-10/31-1987; 1 ♀. Same except: Hacienda 1-0; i-31/ii-21-1987; 1 ♀. *Puntarenas*: PN Corcovado; Golfito (Sector La Bonanza, 500m); iv-20-2002; sweep; 1 ♀; J. Azofeifa Zuóga.

Adryas lioptera Pinto and Owen,
new species
(Figs. 13, 22)

Diagnosis.—The narrower fore wing with its broadly arcuate anterior margin, the considerably longer fore wing venation (extending 0.8 the wing length), the subglabrous membrane behind the fore wing venation and the distinct mediolongitudinal ridge on the propodeal disk are diagnostic. The antennal club also is distinctive in consisting of only 3 segments and having a large number of APA.

Description.—Female. Body length = 0.4 mm ($n = 1$). Color dark brown, with dorsum of metasoma and tibiae/tarsi somewhat lighter. Fore wing fumation extensive, covering basal $9/10$ of wing, but not extending beyond stigmal vein at apex of venation.

Maxillary palp ca. $2.5 \times$ as long as wide with peglike sensillum elongate, only slightly shorter than palp and $\frac{2}{3}$ length of apical seta. Measurements of antennal

scape, pedicle and club: length/width ratio— 2.7 : 1.2 : 1.5 , resp.; relative length— 10 : 5 : 11 , resp.; relative width— 10 : 11 : 18 , resp. Scape widest near middle, narrowing considerably to apex. Club asymmetrically tapering to apex, only 3 segmented (C3, C4 and C5 fused = C3/4/5), without partial separation of C3 and C4, suture between C2 and C3/4/5 obsolescent; segments asymmetrical, C3/4/5 with ventral surface convex and dorsal surface straight, relative maximum length of C2–C5 = 3 : 10 ; without an apical process. Club sensilla: C3/4/5 with RS relatively short, numerous, forming a ventral pilose area extending almost half club length and ca. $0.6 \times$ length of segment; PLS on C2 (1) and C3/4/5 (7), apical ones extending somewhat beyond club apex, another (along dorsum) extending almost entire length of last segment; BPS clavate; UPP elongate, setiform; APA numerous on medial surface of C2 and C3/4/5 (ca. 20 in basal half), also with scattered APA on lateral surface of both segments.

Midlobe of mesoscutum and scutellum each with two pair of elongate setae. Propodeal disk subtriangular with a distinct mediolongitudinal ridge, rounded at apex. Fore wing $2.3 \times$ as long as wide, widest at apex of venation; fringe setae ca. $0.3 \times$ wing width; venation elongate, extending 0.82 wing length; MV curving at apex to form narrow elongate SV; anterior margin of wing broadly arcuate; relative length of PM, MV and SV = 6 : 16 : 7 ; SV directed toward apex of wing; PM ca. $3.0 \times$ as wide as MV, contacting anterior margin of wing (i.e., lacking narrow apical extension of costal cell anterior to PM); PM with setae at same level near base, campaniform sensilla adjacent; MV with 4 dorsal setae (3 elongate anterior, 1 slightly shorter posterior) and 6 shorter ventral setae, basal-most anterodorsal seta distant from PM; SV with elongate stigmal seta anterior to uncus. Fore wing disk sparsely setose, ca. 8 very short setal tracks in narrow non-fumate area at apex of wing; few scattered setae in extensive fumate area behind venation primarily

near posterior section of wing; RS1 absent; two basal track setae almost perpendicular to longitudinal axis of wing; alar acanthae apparently absent. Hind wing with 3 complete setal tracks.

Ovipositor apparently somewhat shorter than hind tibia [single slide-mounted specimen not well positioned for measuring]. Hypopygium extending at least half the length of ovipositor.

Male. Unknown.

Type and material examined.—Holotype ♀: COLOMBIA. *Amazonas*: Amacayacu N. P.; 03.82°S, 70.26°W; iii-8/12-2000; Malaise trap #5; B. Brown/G. Kung/M. Sharkey, collrs; deposited in IAVH. One card-mounted ♀ with same data as type except: sweep; iii-9-2000; M. Sharkey.

Etymology.—In reference to the smooth ('lio', Gr.) appearance of the wing ('ptero', Gr.) in this species.

***Adryas magister* Pinto and Owen,
new species**

(Figs. 1–4, 7, 9, 10, 19–21, 28)

Diagnosis.—Distinguished by the non-fumate oval area behind the venation of the fore wing, the moderately inflated scape, and the completely divided C3 and C4. The inflated wing venation in males may also be diagnostic.

Description.—Female. Body length 0.5–0.6 mm. Color uniformly light to moderately dark brown, dorsum of mesosoma and ventral half of scape somewhat darker; fore wing fumate behind venation except for a relatively large clear oval area behind PM and base of MV.

Maxillary palp ca. 3× as long as wide with peglike sensillum elongate, ca. half palp length and half apical seta length. Antenna noticeably compressed laterally. Measurements of antennal scape, pedicel and club: length/width ratio—2.1 (1.8–2.3): 1.3 (1.2–1.4): 2.4 (2.3–2.8), resp.; relative length—12: 7: 22, resp.; relative width—10: 9: 15, resp. Scape moderately inflated at middle. Club asymmetrically tapering from base to apex, 5-segmented with C4

and C5 incompletely separated but only along dorsal surface, suture between C3 and C4 complete; segments asymmetrical, C4 longest dorsally, C5 longest ventrally, C5 with ventral surface convex and dorsal surface slightly concave; relative maximum length of C2–C5 = 12: 25: 46: 65; C5 0.6 as long as entire club, produced into a moderately long apical process. Club sensilla: C5 with numerous RS, forming a distinct pilose area occupying almost entire ventral surface of segment; PLS on C2 (1), C3 (1), C4 (1) and C5 (3); BCP clavate; UPP on apical process elongate, slightly longer than process itself, subspatulate apically; a few APA on C2–C4.

Midlobe of mesoscutum and scutellum each with 2 pair of elongate setae. Propodeal disk subtriangular, apex narrowly rounded. Fore wing. 2.1× as long as wide, fringe setae ca. 0.3 wing width. Fore wing venation extending to apical 0.6–0.7 of wing; MV gradually curving to form narrow and elongate SV which gradually widens to stigma, SV distinctly directed toward apex of wing; unique in that MV slightly but noticeably wider in basal half; relative length of PM, MV, SV = 2: 6: 3; PM slightly more than twice as wide as MV, diverging slightly from wing margin but without setae in membrane anterior to vein; PM with setae placed at same level near base, campaniform sensilla unique, widely separated by a distance of ca. 4× sensillar diameter (Fig. 20); MV with 4 dorsal setae (3 elongate, anterior; 1 short, posterior) and 7–9 shorter ventral setae, basal-most antero-dorsal seta distant from PM; SV with a moderately long stigmal seta placed well anterior to uncus. Fore wing disk sparsely setose, with ca. 14 setal tracks beyond fumate area in apical fourth of wing, only posterior tracks extending basally into fumate area; RS1 absent; two basal track setae subparallel to longitudinal axis of wing; region behind venation asetose anteriorly; alar acanthae < 10 in number. Hindwing with 3 complete setal tracks.

Ovipositor 1.38 (1.34–1.45) as long as

hind tibia; outer plate narrow, not appreciably widening posteriorly, maximum width to length = ca. 0.25. Hypopygium relatively long, extending 0.5–0.7 length of ovipositor.

Male. As in female except antennal club subconical and almost symmetrical in outline (Fig. 4); C4 and C5 apparently completely separated; C5 without RS, without an apical process, with PLS extending beyond apex of segment. Fore wing venation noticeably modified (Fig. 21): PM and MV considerably inflated, completely confluent; PM and basal $\frac{2}{5}$ of MV of similar width; MV gradually narrowing to SV; width of SV and apical section of MV as in female; PM shorter relative to MV (relative length of PM, MV, SV = 2: 11: 5). Genitalia (Fig. 28) short, 0.3 length of hind tibia.

Types.—Holotype ♀ and allotype ♂. VENEZUELA. *Aragua*: Cuyagua (cacao plantation); 50 m; v-13-1999; J. L. Garcia/R. Montilla, collrs.; deposited in CNC. Two female paratypes, same data, deposited in UCRC. Two additional card-mounted females with same data as types in UCRC and CNC.

Etymology.—Magister, Latin for master or chief.

Material examined.—27 ♀ (11 on slides), 4 ♂ (3 on slides). COSTA RICA. *Heredia*: La Selva Biological Station (75 m); 10°26'N, 84°01'W; ii-27/28-2003; 1 ♀; J. Noyes. Pto. Viejo, 3 km S. (OTS—La Selva, 100 m); i-1993, iii/iv-1993; 3 ♀; P. Hanson. *Guanacaste*: Santa Rosa National Park (350 m); iii-11/20-1996; 1 ♂; L. Masner. ECUADOR. *Napo*: Tiputini Biodiversity Sta. (nr. Yasuni Nat'l Park, 220–250 m); 00°37'55"S, 76°08'39"W; ii-9-1999, x-23-1998, x-26-1998; “fogging terre firme forest”; 9 ♀, 2 ♂; Lots 1915, 1916, 1917, 1942, 2016; T. Erwin, et. al. Rio Napo (Sacha Lodge) (220–230 m); 0.30°S, 76.30°W; ii-22/iii-4-1994; Malaise trap; 1 ♀; P. Hibbs. PERU. *Loreto*: Iquitos, 40 km NE (Explorama Inn on Amazon River); vi-25-1990; 1 ♀; Menke/Awertschenko. VENEZUELA. *Aragua*: Choroní (Cacao Plantation, 120

m); v-11-1999; 1 ♀; J. Garcia/R. Montilla. Cumboto (Cacao Plantation, 50 m); v-13-1999; sweep/yellow pan trap/Malaise trap; 6 ♀; J. Garcia/R. Montilla. Cuyagua (see Types); 5 ♀, 1 ♂.

Remarks.—In the allotype male, the two campaniform sensilla at the apex of the PM are adjacent to one another on one wing and disjunct on the other.

Adryas plurifumosa Pinto and Owen,
new species
(Figs. 14, 23)

Diagnosis.—The extension of the fore wing fumation beyond the level of the stigmal vein and across the entire wing width, the distinctly acuminate apex of the propodeal disk, and the absence of an RS1 setal track in the fore wing distinguishes this species.

Description.—Female. Body length = 0.4 mm (n = 1). Color entirely light brown. Fore wing uniformly fumate behind venation except slightly lighter behind PM and base of MV; fumation extensive, unique for genus in that darkened area extends beyond the level of stigmal vein and across the entire wing width, covering basal 4/5 of wing.

Maxillary palp ca. 2× as long as wide with peglike sensillum elongate, ca. 0.75 length of palp and ca. half apical seta length. Measurements of antennal scape, pedicel and club (n = 2): length/width ratio – 3.0: 1.1: 2.0, resp.; relative length—10: 5: 12, resp.; relative width—3: 4: 5, resp. Scape somewhat tumid but not inflated at middle, subequal in width throughout. Club asymmetrically tapering to apex, incompletely 4-segmented with suture between C3 and C4 incomplete and obsolescent, and C5 apparently completely fused to C3/4 (i.e., club with only 3 complete segments: C1, C2, and C3/4/5), all segments asymmetrical; C3/4/5 with ventral surface convex; relative maximum length of C2–C5 = 2: 5 (C3/4/5); club lacking an apical process. Club sensilla: RS numerous on ventral surface of C3/4/5, weakly S-shaped, forming a pilose area occupying ca. $\frac{1}{3}$ club

length; APB more numerous than in other species. ca. 5 on both C2 and C3/4/5 basal to pilose area; PLS on C2 (1) and C3/4/5 (6 or 7), the two apical-most PLS extending beyond club apex; BPS clavate; a few APA on C2 and base of C3/4/5.

Midlobe of mesoscutum and scutellum each with 2 pair of elongate setae. Propodeal disk subtriangular with apex acuminate. Fore wing 1.9–2.0× as long as wide, fringe setae ca. 0.25× wing width, venation extending 0.6 length of wing; MV curving at apex to form a relatively short SV, SV directed toward apex of wing; relative length of PM, MV and SV = 12: 35: 11; PM ca. 2.8× as wide as MV, diverging slightly from wing margin and with 1–2 short setae in membrane anterior to vein; PM with its two setae at same level near base of vein, campaniform sensilla adjacent; MV with 4 dorsal setae (3 elongate, anterior; 1 short, posterior) and 7–8 relatively short ventral setae, basal-most anterodorsal seta distant from PM; SV with seta medial to uncus. Fore wing disk moderately densely setose, with 12–13 setal tracks beyond fumate area, with numerous scattered, short setae basally except directly behind venation; RS1 absent; two basal tract setae subperpendicular to longitudinal axis of wing; alar acanthae < 10 in number.

Ovipositor length variable (OL/HTL = 0.85 in specimen from Ecuador, 1.02 in the type from Colombia); outer plate broader, width to length of ovipositor = 0.50. Hypopygium extending 0.4–0.6 length of ovipositor.

Male. Unknown.

Type.—Holotype ♀: COLOMBIA. *Amazonas*: PNN Amacayacu, San Martin (150 m); 03°23'S, 70°06'W; ix-8/16-2000; 'M. 838'; B. Amado, collr.; deposited in IAVH. One card-mounted female with same data as holotype except date of collection, not designated as type.

Etymology.—*Plurifumosa* (L.), literally 'most fumate' in reference to the more extensive fumate area of the fore wing in this species.

Material examined.—4♀ (2 on slides). COLOMBIA. *Amazonas*: PNN Amacayacu, San Martin (150 m); 03°23'S, 70°06'W; ix-8/16-2000, x-18/26-2000; 2♀; B. Amado (see Type). PNN Amacayacu; 03.82°S, 70.26°W; iii-8/12-2000; Malaise trap; 1♀; B. Brown/G. Kung/M. Sharkey. ECUADOR. *Napo*: Onkone Gare Camp, 1 km S. (Reserva Etnica Waorani, 216.3 m); 00°39'25.7"S, 76°27'10.8"W; x-4-1996; "fogging in terre firme forest"; 1♀; Lot 1757; T. Erwin, et al.

RELATIONSHIPS

Adryas can be informally divided into two groups of species based on the structure of the antennal club in females and wing structure. In one (Group A) the club is distinctly asymmetrical with a pilose patch of recurved setae ventroapically on the terminal segment (Figs. 3A, 11, 13, 14); also the fore wing is narrower with longer fringe setae (Figs. 17–23) and the hind wing has three complete setal tracks. Included are *A. magister*, *A. erwini*, *A. plurifumosa*, and *A. lioptera*. The other group (Group B) has a more symmetrical, subconical club with only two recurved setae apically (Figs. 5, 6A, 15, 16); and in this group the fore wing is wider, oblately rounded apically, with considerably shorter fringe setae (Figs. 24–27), and the posterior-most setal track on the hind wing is incomplete. This group includes *A. bochica*, *A. iris*, *A. albicerata* and *A. incompta*. The characters of the club in Group A as well as the fore wing features are derived based on comparisons with related genera. There are no features that clearly point to the monophyly of Group B. The incomplete posterior setal track of the hind wing may represent a synapomorphy but this state differs minimally from that in Group A.

Within Group A, *A. magister* and *A. erwini*, and *A. plurifumosa* and *A. lioptera*, respectively, are most similar. The first two species have an apical process at the apex of the antennal club, and the outer plates of the ovipositor do not widen posteriorly. In

these species the apical and basal widths of the ovipositor are subequal. *A. plurifumosa* and *A. lioptera* lack an apical process on the club and the apical width of the ovipositor is considerably greater than the basal width. There also is greater fusion of the club segments in the latter two species. The least amount of claval segment fusion occurs in *A. magister*. It is the only species of *Adryas* having C3 and C4 completely separated. In all other species these two segments are at least partially fused.

Males of *Adryas* are known only for two species, *A. magister* and *A. erwini*. The considerable inflation of the fore wing venation in males of *A. magister* (Fig. 21) does not characterize those of *A. erwini*. *A. magister* females are unique in that their marginal vein, although not inflated as in the male, is perceptibly wider basally than apically (Fig. 19). The fact that the marginal vein is uniform its entire length in all other species of the genus, suggests that this sexual dimorphism is unique to *A. magister*.

Within Group B, *A. bochica* and *A. iris* are most similar as are *A. albicerata* and *A. incompta*. The former two are probably sister species based on the reduced number of setae on the midlobe of the mesoscutum and the narrow fusiform BPS sensilla on the club (Fig. 6B). *A. albicerata* and *A. incompta* have subglobose BPS sensilla and two pair of setae on the mesoscutal midlobe, as do all species of Group A. The relationship of these two species to each other and to *A. bochica* and *A. iris* is questionable. Features readily separating the species of *Adryas* are provided in the key to species and in the species diagnoses.

ACKNOWLEDGMENTS

For the provision of specimens we are particularly indebted to Terry Erwin, Paul Hanson, John Huber, John Noyes and Michael Sharkey. We also thank Gary Platner for his technical assistance, and Michael Schauff (Systematic Entomology Laboratory, USDA) for the loan of the type of *Uscanoidea carlylei* from NMNH. The Col-

ombian collections were facilitated by NSF grant DEB-0205982 to M. Sharkey and B. Brown. This study was supported by grants from the NSF (BSR-9978150; J. Heraty, PI), and USDA (NRIICGP) (2001-35316-11012; J. Pinto, PI).

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